

AMENDMENTS TO THE CLAIMS

Please replace the pending claims with the following claim listing:

Listing of Claims:

1. (Original) A semiconductor laser comprising:
 - a gain region having wavelength selectivity;
 - a propagating region optically coupled to said gain region, having an effective refractive index whose temperature dependence differs from that of said gain region, and having no wavelength selectivity; and
 - a reflection region for reflecting light propagated through said propagating region.

2. (Original) A semiconductor laser comprising:
 - a gain region having wavelength selectivity;
 - a propagating region optically coupled to said gain region, having a material with an effective refractive index whose temperature dependence differs from that of said gain region, and having no gain nor wavelength selectivity; and
 - a reflection region that reflects light propagated through said propagating region, and has no gain.

3. (Original) A semiconductor laser comprising:
a gain region having wavelength selectivity;
a propagating region optically coupled to said gain region, having a structure with
an effective refractive index whose temperature dependence differs from that of said gain
region, and having no gain nor wavelength selectivity; and
a reflection region that reflects light propagated through said propagating region,
and has no gain.

4. (Currently Amended) The semiconductor laser as claimed in ~~any one of claims 1-3~~ claim 1, wherein said reflection region has a mirror or a diffraction grating with a periodic
structure.

5. (Original) A semiconductor laser comprising:
 - a first gain region having wavelength selectivity;
 - a propagating region optically coupled to said first gain region, having a material with an effective refractive index whose temperature dependence differs from that of said gain region, and having no gain nor wavelength selectivity; and
 - a second gain region optically coupled to said propagating region, and having wavelength selectivity.

6. (Original) A semiconductor laser comprising:
a first gain region having wavelength selectivity;
a propagating region optically coupled to said first gain region, having a structure with an effective refractive index whose temperature dependence differs from that of said gain region, and having no gain nor wavelength selectivity; and
a second gain region optically coupled to said propagating region, and having wavelength selectivity.

7. (Currently Amended) The semiconductor laser as claimed in ~~any one of claims 3, 4 and 6~~ claim 3, wherein said structure is different in at least one of a layer structure, layer thickness and waveguide width.

8. (Currently Amended) The semiconductor laser as claimed in ~~any one of claims 1-7~~ claim 1, wherein an absolute value of a product of a length of said propagating region and a difference between a temperature differential coefficient of the effective refractive index of said gain region and a temperature differential coefficient of the effective refractive index of said propagating region is equal to or greater than 7.5×10^{-4} [$\mu\text{m}/\text{K}$].

9. (Currently Amended) The semiconductor laser as claimed in ~~any one of claims 1-8~~ claim 1, wherein said propagating region is composed of a material whose temperature differential coefficient of the effective refractive index is different from that of a semiconductor.

10. (Currently Amended) The semiconductor laser as claimed in ~~any one of claims 1-9~~ claim 1, wherein said propagating region is composed of a material whose temperature differential coefficient of the effective refractive index is negative.

11. (Currently Amended) The semiconductor laser as claimed in ~~any one of claims 1-10~~ claim 1, wherein said gain region comprises a diffraction grating formed by periodic perturbation with at least one of real and imaginary parts of a complex refractive index.

12. (Original) The semiconductor laser as claimed in claim 11, wherein the length of said propagating region is determined such that a longitudinal mode spacing determined by a sum of an effective length of the diffraction grating of said gain region and a length of said propagating region, is greater than a stop bandwidth of said diffraction grating.

13. (Currently Amended) The semiconductor laser as claimed in claim 11 ~~or 12~~, wherein the coupling coefficient of the diffraction grating of said gain region is greater than 300 cm^{-1} .

14. (Currently Amended) The semiconductor laser as claimed in ~~any one of claims 1-13~~ claim 1, wherein said gain region, said propagating region and said reflection region are stacked.

15. (Currently Amended) The semiconductor laser as claimed in ~~any one of claims 1-13~~ claim 1, wherein said gain region and said propagating region are coupled via optical path changing means.

16. (Currently Amended) The semiconductor laser as claimed in ~~any one of claims 1-15~~ claim 1, wherein said propagating region has a waveguide structure having an optical confinement structure on at least one of upper and lower portions and left and right portions.

17. (Original) A semiconductor laser comprising:

- a semiconductor substrate;
- an active layer formed on said semiconductor substrate, and having a distributed reflection structure;
- a cladding layer formed on said active layer;
- a removed region from which part of said active layer and said cladding layer is removed; and
- a temperature compensation layer buried in said removed region, and having an effective refractive index whose temperature dependence differs from that of said active layer.

18. (Original) A semiconductor laser comprising:
 - a semiconductor substrate;
 - a distributed Bragg reflection layer stacked on said semiconductor substrate;
 - an active layer stacked on said distributed Bragg reflection layer, and having a distributed reflection structure;
 - a temperature compensation layer stacked on said active layer, and having an effective refractive index whose temperature dependence differs from that of said active layer; and
 - a reflection layer stacked on said temperature compensation layer.

19. (Original) A semiconductor laser comprising:

- a semiconductor substrate;
- an active layer formed on said semiconductor substrate, and having a distributed reflection structure;
- a cladding layer formed on said active layer, and having an inclined surface at an end of said active layer; and
- a temperature compensation layer formed on said cladding layer, and having an effective refractive index whose temperature dependence differs from that of said active layer.

20-49. (Cancelled)